QUALITY ASSURANCE REVIEW

A handbook for understanding QAR expectations, scores, and reports.

Transportation Data and Analytics Office
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FDOT

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Copies are available in PDF format from the Transportation Data and Analytics Office SharePoint site:
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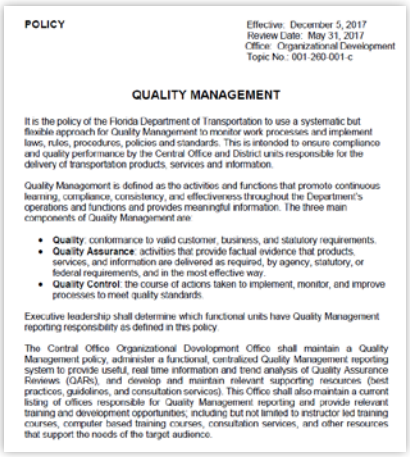
TABLE OF CONTENTS

BACKGROUND

The Quality Assurance (QA) process addresses the need for more useful methods to help prevent inconsistencies in data collection and coding practices, and reduce the margin of error for data use. One part of the QA process, the Quality Assurance Review (QAR), is a well-defined, periodic activity implemented by Florida Department of Transportation (FDOT) - Transportation Data & Analytics (TDA) Office, for evaluating and monitoring District processes to ensure data quality.



POLICY

Effective: December 5, 2017
Review Date: May 31, 2017
Office: Organizational Development
Topic No.: 001-260-001-c

QUALITY MANAGEMENT

It is the policy of the Florida Department of Transportation to use a systematic but flexible approach for Quality Management to monitor work processes and implement laws, rules, procedures, policies and standards. This is intended to ensure compliance and quality performance by the Central Office and District units responsible for the delivery of transportation products, services and information.

Quality Management is defined as the activities and functions that promote continuous learning, compliance, consistency, and effectiveness throughout the Department's operations and functions and provides meaningful information. The three main components of Quality Management are:

- **Quality**: conformance to valid customer, business, and statutory requirements.
- **Quality Assurance**: activities that provide factual evidence that products, services, and information are delivered as required, by agency, statutory, or federal requirements, and in the most effective way.
- **Quality Control**: the course of actions taken to implement, monitor, and improve processes to meet quality standards.

Executive leadership shall determine which functional units have Quality Management reporting responsibility as defined in this policy.

The Central Office Organizational Development Office shall maintain a Quality Management policy, administer a functional, centralized Quality Management reporting system to provide useful, real time information and trend analysis of Quality Assurance Reviews (QARs), and develop and maintain relevant supporting resources (best practices, guidelines, and consultation services). This Office shall also maintain a current listing of offices responsible for Quality Management reporting and provide relevant training and development opportunities, including but not limited to instructor led training courses, computer based training courses, consultation services, and other resources that support the needs of the target audience.

The general intent of a QAR process involves observing data collection practices, correcting errant activities, and improving workflows. This process includes following procedures, best practices, guidelines, standards, and policies established at Federal, State, or Department levels. TDA staff conduct QARs by working with District staff in accordance to FDOT's *Quality Management Topic No. 001-260-001*.

The responsibility of reviewing processes, recommending improvements, and providing technical assistance rests with TDA. An important reason for reviewing data collection processes is to obtain the highest data integrity possible, unify report results, and identify effective processes or methods employed by the Districts. Processes that do not work well or that do not consistently produce desired results need to be improved whenever possible. This applies to TDA as well as the Districts.

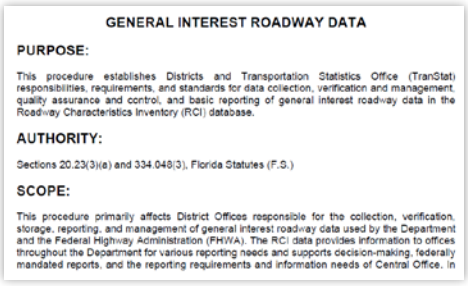
REQUIREMENTS OF FLORIDA STATUTES

FDOT's overall goal is to ensure efficient, safe, and interconnected methods of mobility for those who choose to live, work, and visit Florida.

In recognition of that goal, the Florida Legislature mandated Section 334.048(3) of the Florida Statutes which states the Department's Central Office will monitor the seven District Offices, Turnpike Enterprise, and Central Office units. The monitoring process will include assessing each unit's performance and determining their compliance with all applicable laws, rules, policies, procedures, guidelines, and standards. Additionally, Section 20.23(3)(a) of the Florida Statutes outlines FDOT's responsibility to establish a plan that clearly specifies which areas will be monitored and what activities and criteria will be used to measure compliance, and creates a feedback process that assures that monitored findings are reported and inconsistencies are corrected.

REQUIREMENTS OF THE GENERAL INTEREST ROADWAY DATA (GIRD) PROCEDURE

The GIRD Procedure outlines TDA's responsibilities pertaining to QA as follows:



GENERAL INTEREST ROADWAY DATA

PURPOSE:

This procedure establishes Districts and Transportation Statistics Office (TranStat) responsibilities, requirements, and standards for data collection, verification and management, quality assurance and control, and basic reporting of general interest roadway data in the Roadway Characteristics Inventory (RCI) database.

AUTHORITY:

Sections 20.23(3)(a) and 334.048(3), Florida Statutes (F.S.)

SCOPE:

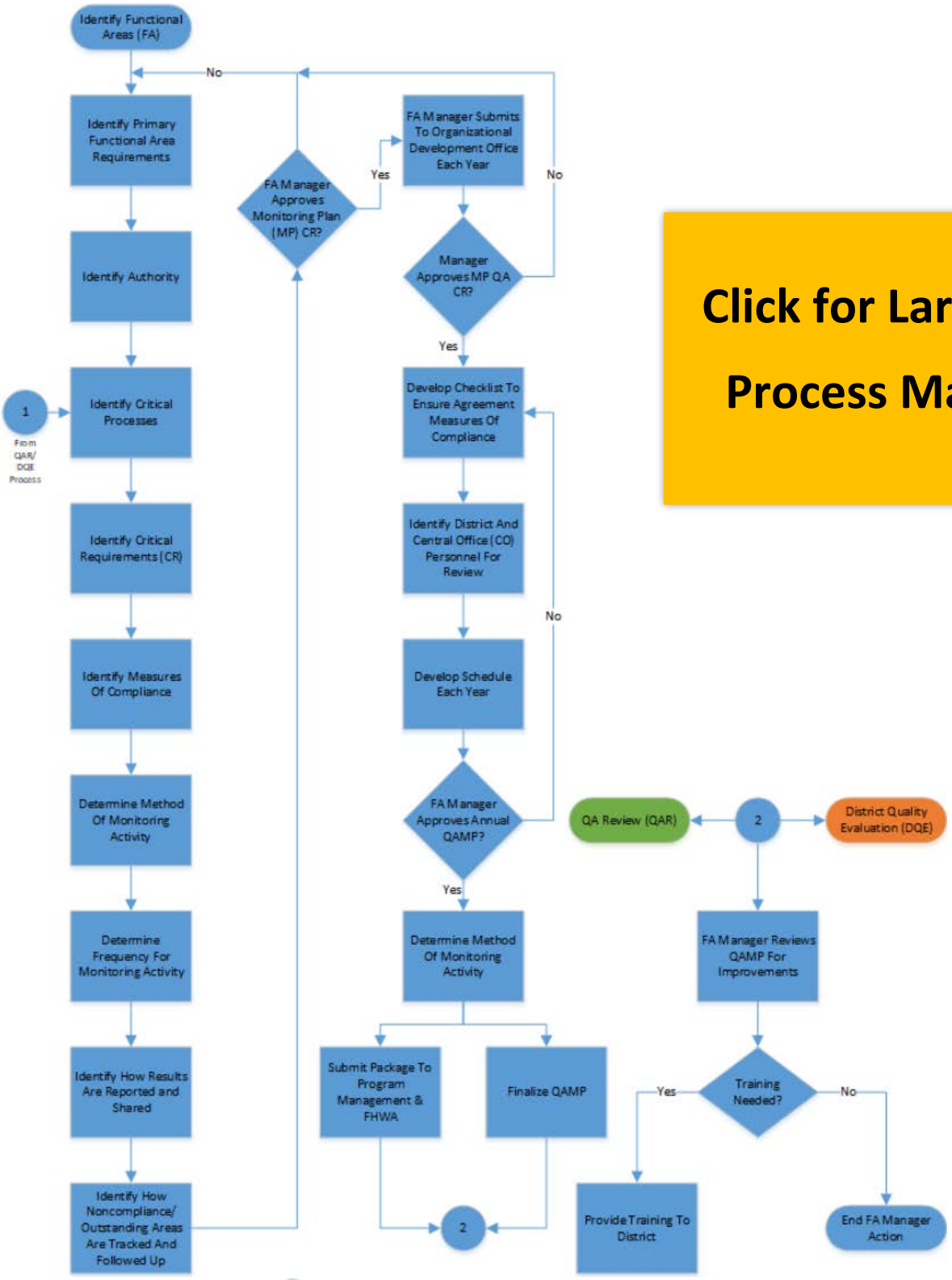
This procedure primarily affects District Offices responsible for the collection, verification, storage, reporting, and management of general interest roadway data used by the Department and the Federal Highway Administration (FHWA). The RCI data provides information to offices throughout the Department for various reporting needs and supports decision-making, federally mandated reports, and the reporting requirements and information needs of Central Office, in

- Schedule, coordinate and conduct biennial QARs in each District to monitor activities for compliance with approved statewide procedures, directives, guidelines, standards, and policies.
- Schedule, coordinate and conduct District Quality Evaluations (DQEs) for all Districts twice a year to clearly identify areas of responsibility, and establish a set of objectives and quantifiable measures that determine District quality. The DQE is an objective evaluation process based on specific goals, objectives and program requirements, as shown in the DQE Handbook.
- Determine the effectiveness of Districts' data collection processes and Districts' Quality Control (QC) Monitoring Plans in order to identify best practices, unsatisfactory performance, and areas needing improvement.
- Review all District Quality Control (QC) Monitoring Plans and determine what compliance indicators have been satisfactorily addressed.

- Share best practices with all Districts, make recommendations for improvements, and assist Districts with developing improvement strategies in areas needing improvement.

QUALITY ASSURANCE MONITORING PLAN (QAMP)

The Quality Assurance Monitoring Plan (QAMP) helps the Districts adhere to FDOT's policies, procedures, and rules. It is the method of monitoring consistency and reasonable conformance to established requirements, policies, and procedures at the District level. The QAMP steps are outlined in the diagram below and discussed in more detail throughout this handbook.



The QAMP reviews District and the TDA Office tasks/activities to ensure accurate data is being coded in the Roadway Characteristics Inventory (RCI) database. The RCI database stores data for the Highway Performance Monitoring System (HPMS) and Traffic Monitoring Program, which are integral parts of FDOT's submittal to Federal Highway Administration (FHWA). The RCI database is also used to create Geographic Information System (GIS)/Linear Referencing System (LRS) work products for internal and external data users.

The QAMP addresses schedules, notifications, content, documentation, reporting, follow-up tasks, and activities as shown below. The QA process monitors District performance by ensuring that the processes within District's QC plan are sound and produce necessary results for established requirements.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
Transportation Data & Analytics (TDA) Office
Quality Assurance Monitoring Plan 2017/2018

PRIMARY FUNCTION (PF) I: Roadway Data and Reports to the Department and Public
Critical Process: Straight-line Diagrams (SLDs) for the State Highway System (SHS), MAP-21 Off-system roads, and SIS Off-system Connectors
Critical Requirement 1-RCI (PF I): Maintain and Update SLDs

TDA Compliance Indicators	TDA QC Tasks/Activities	District QC Plan	District QC Tasks/Activities
A. All SLDs will be updated and distributed within 120 calendar days from the written date of notification of final or conditional acceptance from TDA. Upon completion, notification will be sent to TDA.	a-1. Update RITA Handbook and SLD Handbook and make available to districts on SharePoint site.	I. Establish dates of relevant RCI changes for all roads in Roadway Inventory Tracking Application (RITA).	i-1. Determine if changes to RCI data warrant a new SLD.
	a-2. Ensure that the most updated GIRD procedure is being used.	II. Revise Roadway Characteristic Inventory (RCI) database as indicated.	i-2. See the SLD Handbook for SLD Regeneration Process requirements.
	a-3. Provide RCI technical assistance/support to districts as needed.	III. Produce and distribute all SLDs within 120 calendar days from the written date of notification. Notify TDA about any changes made.	i-3. Update RITA revision boxes. Create a "New Form" for 5-Year inventory updates. For all other SLD updates, create an "Interim Revision".
B. All interim data updates/ discrepancies in RCI data will be corrected within 30 calendar days of written notification from TDA. If necessary, SLDs will also be corrected within the same 30 calendar days.	b-1. Update RITA Handbook and SLD Handbook and make available to districts on SharePoint site.	I. Same as above.	i-1. Same as above.
	b-2. Ensure that the most updated GIRD procedure is being used.	II. Same as above.	
		III. Produce and distribute all SLDs within 30 calendar days from the written date of notification. Notify TDA.	
C. At least 90% of the SLDs accurately match current RCI data and conform to legibility (readable and decipherable) and format standards outlined in the SLD Handbook.	c-1. Make sure districts are using the most current SLD Diagrammer program.	I. Ensure the current SLDs are on the Straight-Line Diagrams Online (SLO) website.	i-1. Ensure that all SLDs were regenerated from RCI data using the current SLD Diagrammer program.
	c-2. Update SLD Handbook and make available to districts on SharePoint site.	II. Ensure the SLDs conform to formatting and data requirements.	i-2. Ensure that SLDs meet the required specifications using the SLD regeneration requirements. Review each SLD sheet to ensure that all data is legible.
D. All SLDs inventory and revision date boxes are consistent with corresponding date in RITA tracking forms.	d-1. Provide RCI technical assistance/support to districts as needed.	I. Update SLDs with the inventory and revision dates.	i-1. Prepare revised SLDs with current RCI data and distribute with notification to TDA.
		II. Update RITA tracking forms after any relevant SLD updates have been made.	i-2. SLDs and RITA dates should match.

The QAMP is reviewed yearly so that it is sustainable, practical, and ensures the quality of FDOT products and services, making sure processes continue to be Consistent, Predictable and Repeatable (CPR). Revisions to the District QC Monitoring Plans are most likely to happen after a QAR or yearly with changes to critical requirements that are outlined in the QAMP. The QAR Schedule, District County Cluster Map, and QAMP are submitted to the FDOT Organizational Development Office yearly.

OVERVIEW OF THE QAR PROCESS

QAR Schedule

The QAR is a planned, coordinated, and continuous process conducted by the TDA Office and the Districts in accordance with FDOT's *Quality Management Topic No. 001-260-001*. To ensure consistent data quality, TDA

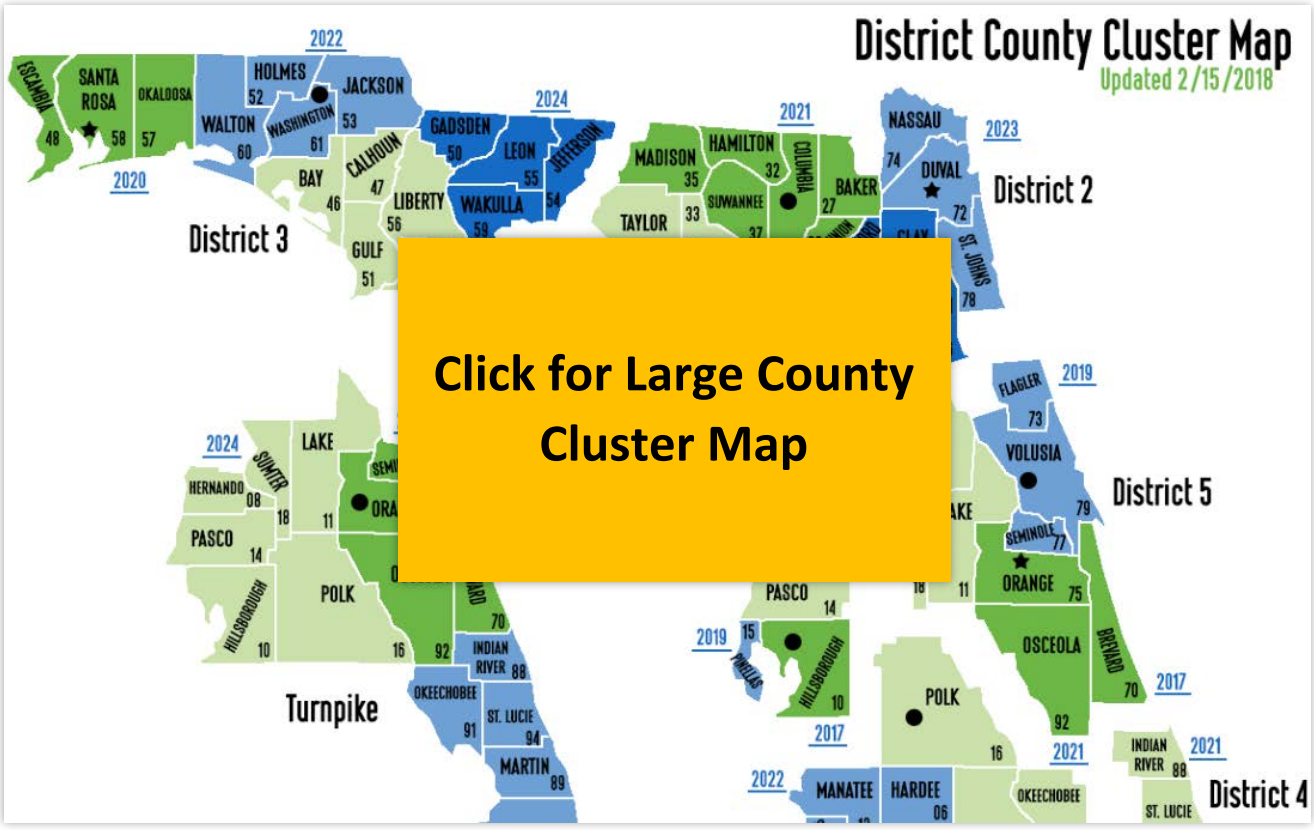
conducts QARs to observe District data collection practices and to provide any necessary training. An example of a QAR schedule for a fiscal year is shown below; however, dates are subject to change.

QUALITY ASSURANCE REVIEW SCHEDULE FOR FY 2017/2018

DISTRICT OFFICE	LAST REVIEW	REVIEW DATES	STATUS	SELECTED PROGRAM AREAS*
District 2 Planning	*September 21-24, 2015 Duval, Nassau, & St. Johns*	**August 28-31, 2017** Alachua, Bradford, Clay, & Putnam	*Date confirmed with Cynthia Boyette on 4/3/2017*	*SLDs, Key Sheets, RCI, HPMS*
District 4 Planning	*October 26 - 29, 2015 Indian River, Martin, & St. Lucie*	**October 16-19, 2017** Palm Beach	*Date confirmed with Min-Tang Li on 4/19/2017*	*SLDs, Key Sheets, RCI, HPMS*
District 6 Planning	*March 14 - 17, 2016 Lower Miami-Dade, & Monroe*	**March 12-15, 2018** Upper Miami-Dade & Monroe	*Date confirmed with Neil Lyn on 4/11/2017*	*SLDs, Key Sheets, RCI, HPMS*
District 1 Planning	*May 23 - 26, 2016 Desoto, Charlotte, & Lee*	**May 21-24, 2018** Highlands, Polk, & Okeechobee	*Date confirmed with Duane Cadieu on 4/18/2017*	*SLDs, Key Sheets, RCI, HPMS*

District County Review by Cluster

Each District is divided into two to four county clusters. The clusters are rotated with each reoccurring biennial QAR, thus preventing each cluster from being reviewed back to back. The use of county clusters helps restrict reviews to compact and efficient geographical areas. The map below identifies county clusters by review period for each District. A complete District County Cluster map is shown in Appendix C.



QUALITY ASSURANCE REVIEW – RCI SEGMENTS

The selection process begins by randomly selecting 12 RCI roadway segments in the review county cluster. Ten roadways become the official review segments and the remaining two become alternate segments. The alternate segments are used only if a selected roadway is under construction and requested to be excluded before the QAR begins.

The following information is listed on the RCI Segment selection sheet, shown below:

- SEGMENT – Letters are assigned to the selected segment (A, B, C…. & L).
- COUNTY – County name where the selected segment exists.
- ROADWAY ID – Identifies the eight-digit number assigned to the selected segment. The roadway ID contains three sets of numbers: county, section, and sub-section.
- SEGMENT BEGINNING MILEPOINT (BMP) – BMPs are associated with roadway IDs and represent specific locations or physical points on the road. Each segment BMP is randomly selected from physical points such as intersections or structures along the inventory direction.
- SEGMENT ENDING MILEPOINT (EMP) – EMPs are associated with roadway IDs and represent specific locations or physical points on the road. Each segment EMP is randomly selected from physical points such as intersections or structures along the inventory direction.
- LOCAL NAME – Local name of the selected segment.
- LENGTH – Total length of the selected segment (equals EMP minus BMP).

RCI SEGMENTS

SEGMENT	COUNTY	ROADWAY ID	SEGMENT BMP	SEGMENT EMP	LOCAL NAME	LENGTH
A	County name	XXXXXXXX	1.000	2.000	Local name of the roadway	1.000
B	County name	XXXXXXXX	3.000	6.000	Local name of the roadway	3.000
C	County name	XXXXXXXX	2.000	3.000	Local name of the roadway	1.000
D	County name	XXXXXXXX	4.000	7.000	Local name of the roadway	3.000
E	County name	XXXXXXXX	1.000	2.000	Local name of the roadway	1.000
F	County name	XXXXXXXX	1.000	2.000	Local name of the roadway	1.000
G	County name	XXXXXXXX	3.000	6.000	Local name of the roadway	3.000
H	County name	XXXXXXXX	2.000	3.000	Local name of the roadway	1.000
I	County name	XXXXXXXX	4.000	7.000	Local name of the roadway	3.000
J	County name	XXXXXXXX	1.000	2.000	Local name of the roadway	1.000
ALTERNATES						
K	County name	XXXXXXXX	3.000	6.000	Local name of the roadway	3.000
L	County name	XXXXXXXX	3.000	6.000	Local name of the roadway	3.000

When randomly selecting segments, the QA team will deliberately avoid selecting a roadway based on personal knowledge of problems with the data or current construction areas. The QA team reviews the construction roadways using the Roadway Inventory Tracking Application (RITA) and the FDOT Financial Project Search website: http://webapp01.dot.state.fl.us/FinancialProjectSearch/. The District receives the selected segments ten working days before the QAR begins to prepare the field review schedule, route plan, and update their QC Monitoring Plan.

RCI Areas of Compliance

The four major RCI review areas of compliance monitored during the QAR process include:

- RCI Data Collection Timeliness
- Straight Line Diagram (SLD) Data Accuracy and Legibility
- Key Sheet Production and Distribution
- RCI Data Collection Accuracy

RCI Data Collection Timeliness

Requirement: The GIRD states Districts are required to conduct a 5-year re-inventory for roadways with a status of Active On the State Highway System (SHS), Active Off the SHS, and Active Exclusive. The re-

inventory involves data collection, data entry, and data editing for all non-secured RCI Planning features. This requirement corresponds to the QAMP's Critical Requirement, "Maintain RCI Five-Year Active On-System Inventory." The required accuracy for the area of performance is a score of 100%.

Responsible Party: Districts

Required For: Active On the SHS, Active Off the SHS, and Active Exclusive

How to QC this data: Review the Roadway Inventory Tracking Application (RITA) 5-Year Inventory report. The RCI 5-Year update date must be five years or less from the previous RCI update date. The Districts will update RITA and notify TDA and affected users when completed.

SLD Data Accuracy and Legibility

Requirement: This requirement corresponds to the QAMP's Critical Requirement, "Maintain and Update SLDs." It stipulates that at least 90% of the SLDs must accurately match current RCI data and conform to legibility and format standards as outlined in the SLD Handbook produced by the TDA Office. This includes ensuring that the most current SLD is available for use on the Straight-Line Diagrams Online (SLO) GIS Web Application. Additionally, all SLD inventory/revision date boxes must match corresponding roadway entries on the RITA tracking forms.

Responsible Party: Districts

Required For: Active On the SHS

How to QC this data: Review and compare generated SLDs with the latest RCI data and the District SLDs updated on the SLO GIS Web Application. Districts are required to ensure that SLDs are formatted properly and have no overlapping data. The Districts will update RITA and notify TDA and affected users when completed.

Key Sheet Production and Distribution

Requirement: The GIRD states that Districts are required to update Key Sheets every 5-Years from the last update to accurately reflect 100% of roadways with a status of Active On the SHS and Active Off the SHS that are designated MAP-21, Strategic Intermodal System (SIS), and National Highway System (NHS). This requirement corresponds to the QAMP's Critical Requirement "Maintain and Update Key Sheets."

Responsible Party: Districts

Required For: Active On the SHS and Active Off the SHS, MAP-21, SIS, and NHS

How to QC this data: Review and compare current Key Sheets with updated RCI data. Districts are required to ensure that Key Sheets are updated according to inventory cycle, easy to read, and clearly show all District roadways. The Districts will update RITA and notify TDA and affected users when completed.

RCI Data Collection Accuracy

Requirement: This requirement corresponds to the QAMP's Critical Requirement, "Ensure RCI Active On-System RCI Data Accuracy." The required RCI data collection accuracy for this area of performance is at least 95% for the overall score, which is an average of the Office and Field Review scores. Administrative data elements must score a 100% accuracy for the defined sponsored data as described in the GIRD procedure.

Refer to the RCI Features & Characteristics Handbook produced by the TDA Office for details on the RCI feature elements.

Responsible Party: Districts

Required For: Active On the SHS

How to QC this data: Review and maintain the listed RCI Office and Field features and characteristics for required highway data. Evaluate QA/QC Monitoring Plans to identify non-compliant/unsatisfactory areas of performance and processes needing Improvement Plans. If the score is below the required area of performance, the District must produce an Action Plan outlining the District's approach to resolve areas of improvement.

QAR RCI Office Review

The 25 characteristics assessed during the RCI Office review, listed below, are given a score between 0 and 10 according to the number of segments without inconsistencies. If a segment has more than one inconsistency for a characteristic, only one inconsistency is noted.

Requirement: This requirement also corresponds to the QAMP's Critical Requirement as stated above, "Ensure RCI Active On-System RCI Data Accuracy" for the RCI Office data. Administrative data elements must score a 100% accuracy for the defined sponsored data as described in the GIRD procedure.

Refer to the RCI Features & Characteristics Handbook for details on the RCI feature elements.

RCI Office Features & Characteristics

Feature	Characteristic	Definition	Total Selected	Total Correct	Inconsistent Segment(s)	Percent Correct
111	STROADNO*	State Road Number	10	10		100%
112	FAHWYSYS*	Federal Highway System Code	10	10		100%
113	USROUTE*	US Route Number	10	10		100%
121	FUNCLASS*	Functional Classification	10	10		100%
124	HWYLOCAL*	Highway Location Code	10	7	BGH	70%
	PLACECD*	Current Place Code	10	8	AH	80%
	URBAREA*	Urban Area Number	10	9	A	90%
	URBSIZE	Urban Size	10	9	A	90%
138	NALIGNDT	New Alignment Date	10	10		100%
	NALIGNID	Section/Sub-section of New Alignment	10	10		100%
	NALNBGPT	New Alignment Begin MP	10	10		100%
	NALNENPT	New Alignment End MP	10	10		100%
140	OSDATE	On or Off-system Date	10	10		100%
	STATEXPT*	Segment Status	10	10		100%
141	BEGSECPT	Begin Section MP of Exception Field	10	10		100%
	ENDSECPT	End Section MP of Exception Field	10	10		100%
	RDWYID	County, Section, Sub-section	10	10		100%
147	SISFACTPx	SIS Facility Type Level (x = 1-9)	10	10		100%
252	EXITNO	Interchange/Exit Number	10	10		100%
	INTERCHG	Type of Interchange	10	10		100%
330	FLWBRKID	Count Station Assigned to Break	10	10		100%
	TRFBRKCD	Traffic Break Code	10	10		100%
331	AADTDATE	AADT Date	10	10		100%
	AADTTYPE	AADT Type	10	10		100%
	SECTADT	Section Average ADT	10	10		100%
* Required accuracy for these Characteristics is 100%.		**RCI Office Total:**	**250**	**243**		**97.2%**

Responsible Party: Districts

Required For: Active On the SHS. Refer to the RCI Features & Characteristics Handbook produced by the TDA Office for detail of the RCI feature elements.

How to QC this data: Review and maintain the listed RCI Office features and characteristics for required highway data. Evaluate QA/QC Monitoring Plans to identify non-compliant/unsatisfactory areas of performance and processes needing Improvement Plans. If the score is below the required area of performance, the District must produce an Action Plan outlining the District's plan to resolve areas of needed improvement.

QAR RCI Field Review

The 31 characteristics assessed during the RCI Office review, listed below, are given a score between 0 and 10 according to the number of segments without inconsistencies. If a segment has more than one inconsistency for a characteristic, only one inconsistency is noted.

Requirement: This requirement also corresponds to the QAMP's Critical Requirement, "Ensure RCI Active On-System RCI Data Accuracy" for the RCI Field data. Some administrative data element accuracy is at least 100% for the defined sponsored data as defined in the GIRD procedure.

Refer to the RCI Features & Characteristics Handbook for details on the RCI feature elements.

Responsible Party: Districts

Required For: Active On the SHS. Refer to the RCI Features & Characteristics Handbook produced by the TDA Office for detail of the RCI feature elements.

How to QC this data: Review, verify, and maintain the listed RCI Field features and characteristics using the Basic Data Collection steps in the RCI Planning Data Handbook. Evaluate QA/QC Monitoring Plans to identify non-compliant/unsatisfactory areas of performance and processes needing Improvement Plans. If the score is below the required area of performance, the District must produce an Action Plan outlining the District's plan to resolve areas of needed improvement.

RCI Field Features & Characteristics

Feature	Characteristic	Definition	Total Selected	Total Correct	Inconsistent Segment(s)	Percent Correct
114	LOCALNAM*	Local Name of Facility	10	10		100%
120	TYPEROAD	Type of Road	10	10		100%
122	RDACCESS*	Access Control Type	10	10		100%
212	NOLANES	Number of Roadway Lanes	10	9	J	90%
	SURWIDTH	Pavement Surface Width	10	9	I	90%
213	AUXLNTYP	Auxiliary Lane Type	10	10		100%
	AUXLNUM	Number of Auxiliary Lanes	10	10		100%
	AUXLNWTH	Average Auxiliary Lane Width	10	10		100%
214	SHLDTYPE	Highway Shoulder Type	10	6	BCDG	60%
	SLDWIDTH	Highway Shoulder Width	10	7	BCD	70%
215	MDBARTYP	Type of Median Barrier	10	9	D	90%
	MEDWIDTH	Highway Median Width	10	7	AHJ	70%
	RDMEDIAN	Highway Median Type	10	7	AHJ	70%
216	BIKELNCD	Bicycle Lane	10	10		100%
	BIKSLTCD	Bicycle Slot	10	10		100%
	SDWLKBCD	Sidewalk Barrier Code	10	10		100%
	SHARDPTH	Share Path Width & Separation	10	10		100%
	SIDWLKWD	Sidewalk Width & Separation	10	10		100%
219	ISLDTYPE	Inside Shoulder Type	10	10		100%
	ISLDWDTH	Inside Shoulder Width	10	10		100%
251	BEGSECNM	Begin Roadway Section MP Description	10	10		100%
	ENDSECNM	Ending Roadway Section MP Description	10	10		100%
	INTSDIRx	Intersection Direction (x = 1-9)	10	6	ADFH	60%
253	CHKDIGIT	Check Digit	10	10		100%
	RRCROSNO	National RR Grade Crossing Number	10	10		100%
258	BOXCULNO	Box Culvert Number	10	10		100%
	BRIDGENO	Bridge Number	10	9	D	90%
	FACCROSS	Facility Crossed	10	10		100%
	UNDPASNO	Underpass Number	10	10		100%
326	TRFSTANO	Traffic Station Number	10	8	FJ	80%
	TRSSTATYP	Traffic Station Type	10	9	F	90%
* Required accuracy for these Characteristics is 100%.		**RCI Office Total:**	**310**	**286**		**92.3%**

QUALITY ASSURANCE REVIEW – HPMS SAMPLES

The selection process begins by randomly selecting 12 HPMS roadway samples in the review county cluster. Ten roadways become the official review samples and the remaining two become alternate samples. The alternate segments are used only if a selected roadway is under construction and requested to be excluded before the QAR begins.

The following information is listed on the HPMS Sample selection sheet, as shown below:

- SAMPLE – Letters are assigned to the selected sample (M, N, O…. & X).
- COUNTY – County name where the selected sample exists.
- SAMPLE ID – Identifies the twelve-digit number assigned to the selected samples. The Sample ID contains four sets of numbers: county, section, sub-section, and HPMS sample ID.
- SAMPLE BEGINNING MILEPOINT (BMP) – BMPs are associated with Sample IDs and represent specific locations or physical points on the road. Each sample BMP is randomly selected from physical points such as intersections or structures along the inventory direction.
- SAMPLE ENDING MILEPOINT (EMP) – EMPs are associated with Sample IDs and represent specific locations or physical points on the road. Each sample EMP is randomly selected from physical points such as intersections or structures along the inventory direction.
- LOCAL NAME – Local name of the selected sample.
- LENGTH – Total length of the selected sample (equals EMP minus BMP).

HPMS SAMPLES

SAMPLE	COUNTY	SAMPLE ID	SEGMENT BMP	SEGMENT EMP	LOCAL NAME	LENGTH
M	County name	XXXXXXXXXXXX	1.000	2.000	Local name of the roadway	1.000
N	County name	XXXXXXXXXXXX	3.000	6.000	Local name of the roadway	3.000
O	County name	XXXXXXXXXXXX	2.000	3.000	Local name of the roadway	1.000
P	County name	XXXXXXXXXXXX	6.000	7.000	Local name of the roadway	1.000
Q	County name	XXXXXXXXXXXX	5.000	9.000	Local name of the roadway	4.000
R	County name	XXXXXXXXXXXX	1.000	2.000	Local name of the roadway	1.000
S	County name	XXXXXXXXXXXX	3.000	6.000	Local name of the roadway	3.000
T	County name	XXXXXXXXXXXX	2.000	3.000	Local name of the roadway	1.000
U	County name	XXXXXXXXXXXX	6.000	7.000	Local name of the roadway	1.000
V	County name	XXXXXXXXXXXX	5.000	9.000	Local name of the roadway	4.000
ALTERNATES						
W	County name	XXXXXXXXXXXX	0.000	2.000	Local name of the roadway	2.000
X	County name	XXXXXXXXXXXX	4.000	5.000	Local name of the roadway	1.000

When randomly selecting samples, the QA team will deliberately avoid selecting a roadway based on personal knowledge of problems with the data or current construction areas. The QA team reviews the construction roadways using the Roadway Inventory Tracking Application (RITA) and the FDOT Financial Project Search website: http://webapp01.dot.state.fl.us/FinancialProjectSearch/. The District receives the selected samples ten working days before the QAR begins to prepare field review schedule, route plan, and update their QC Monitoring Plan.

HPMS Areas of Compliance

The two major HPMS review areas of compliance monitored during the QAR process include:

- HPMS Data Collection Timeliness
- HPMS Data Collection Accuracy

HPMS Data Collection Timeliness

Requirement: The GIRD states Districts are required to conduct a cyclical 3-year re-inventory for HPMS standard samples. The re-inventory involves data collection, data entry, and data editing for RCI Planning

Features 118 and 119. This requirement corresponds to the QAMP's Critical Requirement, "Conduct HPMS Standard Sample Section Re-inventory." The required performance accuracy is 100%.

Responsible Party: Districts

Required For: All HPMS samples. Refer to the RCI Features & Characteristics Handbook produced by the TDA Office for detail of the RCI and HPMS feature elements.

How to QC this data: Review the RITA 3-Years Inventory report. The HPMS 3-Years update date must be three years or less from the previous HPMS update date.

HPMS Data Collection Accuracy

Requirement: This requirement corresponds to the QAMP's Critical Requirement, "Ensure HPMS Standard Sample Section Accuracy." The HPMS data collection requires an accuracy for the areas of performance at least 90% for the HPMS overall score (include the HPMS Office and Field scores). All other administrative data element accuracy is at least 100% for the defined sponsored data as defined in the GIRD procedure.

Responsible Party: Districts

Required For: All HPMS samples. Refer to the RCI Features & Characteristics Handbook produced by the TDA Office for detail of the RCI and HPMS feature elements.

How to QC this data: Review and maintain the HPMS Office and Field listed features and characteristics for required highway data. Evaluate QA/QC Monitoring Plans to identify non-compliance/ unsatisfactory area of performance, and needed process Improvement Plans. If the score is below the required area of performance; the District must produce an Action Plan outlining the District's plan to resolve areas of needed improvement.

QAR HPMS Office Review

The 26 characteristics assessed during the HPMS Office review, listed below, are given a score between 0 and 10 according to the number of segments without inconsistencies. If a sample has more than one inconsistency for a characteristic, only one inconsistency is noted.

Requirement: This requirement corresponds to the QAMP's Critical Requirement as stated above, "Ensure HPMS Standard Sample Section Accuracy" for the HPMS Office data. Some administrative data element accuracy is at least 100% score for the defined sponsored data as defined in the GIRD procedure.

HPMS Office Features & Characteristics

Feature	Characteristic	Definition	Total Selected	Total Correct	Inconsistent Sample(s)	Percent Correct
111	STROADNO*	State Road Number	10	10		100%
112	FAHWYSYS*	Federal Highway System Code	10	10		100%
113	USROUTE*	U.S. Route Number	10	10		100%
118	CURCLASx	Curves by Class (x = A-F)	10	10		100%
	GRACLASx	Grades by Class (x = A-F)	10	10		100%
	HPMSIDNO	HPMS Sample ID Number	10	10		100%
	TERRAIN	Type of Land Terrain	10	10		100%
119	BASETHIK	HPMS Base Course Thickness	10	10		100%
	BASETYPE	HPMS Base Type	10	10		100%
	FLEXTHIK	HPMS Thickness of Flexible Pavements	10	10		100%
	OVRYTHIK	HPMS Last Overlay Thickness	10	10		100%
	RIGIDTHIK	Thickness of Rigid Pavement	10	10		100%
	SURFACTP	Surface Type	10	10		100%
	YRCONST	Year of Last Construction	10	10		100%
	YRIMPT	Year of Last Improvement	10	10		100%
121	FUNCLASS*	Functional Classification	10	10		100%
122	TOLLROAD	Toll Road Flag	10	10		100%
124	HWYLOCAL*	Highway Location Code	10	10		100%
	PLACECD*	Census Place (City) Code	10	10		100%
	URBAREA*	Urban Area Number	10	10		100%
	URBSIZE	Urban Size	10	10		100%
330	FLWBRKID	Count Station Assigned to Break	10	10		100%
	TRFBRKCD	Traffic Break Code	10	10		100%
331	AADTDATE	AADT Date	10	10		100%
	AADTTYPE	AADT Type	10	10		100%
	SECTADT	Section Average ADT	10	10		100%
		HPMS Office Total:	**260**	**260**		**100.0%**

* Required accuracy for these Characteristics is 100%.

Responsible Party: Districts

Required For: All HPMS samples. Refer to the RCI Features & Characteristics Handbook produced by the TDA Office for detail of the RCI and HPMS feature elements.

How to QC this data: Review and maintain the HPMS Office listed features and characteristics for required highway data. Evaluate QA/QC Monitoring Plans to identify non-compliance/ unsatisfactorily area of performance, and needed process Improvement Plans. If the score is below the required area of performance; the District must produce an Action Plan outlining the District's plan to resolve areas of needed improvement.

QAR HPMS Field Review

The 36 characteristics assessed during the HPMS Field review, listed below, are given a score between 0 and 10 according to the number of segments without inconsistencies. If a sample has more than one inconsistency for a characteristic, only one inconsistency is noted.

Requirement: This requirement corresponds to the QAMP's Critical Requirement stated above, "Ensure HPMS Standard Sample Section Accuracy" for the HPMS field data. Some administrative data element accuracy is at least 100% for the defined sponsored data as defined in the GIRD procedure.

Responsible Party: Districts

Required For: All HPMS samples. Refer to the RCI Features & Characteristics Handbook produced by the TDA Office for detail of the RCI and HPMS feature elements.

How to QC this data: Review, verify and maintain the HPMS Field listed features and characteristics using the Basic Data Collection steps in the RCI Planning Data Handbook. Evaluate QA/QC Monitoring Plans to identify non-compliance/ unsatisfactory areas of performance, and needed process Improvement Plans. If the score is below the required area of performance; the District must produce an Action Plan outlining the District's plan to resolve areas of needed improvement.

HPMS Field Features & Characteristics

Feature	Characteristic	Definition	Total Selected	Total Correct	Inconsistent Sample(s)	Percent Correct
118	ATGROTHR	Other or No Control At-Grade Intersections	10	10		100%
	ATGRSIG	Signals At-Grade Intersections	10	9	O	90%
	ATGRSTOP	Stop Signs At-Grade Intersections	10	8	RT	80%
	ATGRTYPE	At-Grade Type - First or Last	10	10		100%
	HORALADQ	Horizontal Alignment Adequacy	10	10		100%
	PEAKLANE	Number of Lanes in Peak Direction in Peak Hour	10	10		100%
	SIGPREV	Prevailing Type of Signalizations	10	10		100%
	SIT1500	% of Passing Sight Distance >= 1500 feet	10	10		100%
	TURNLANL	Turn Lanes Left	10	9	T	90%
	TURNLANR	Turn Lanes Right	10	10		100%
	TYPEOP	Type of Parking	10	9	T	90%
	VRTALADQ	Vertical Alignment Adequacy	10	10		100%
	WIDOBST_	Widening Obstacles - A through G, and X	10	10		100%
	WIDPOTNL	Widening Potential Lanes	10	10		100%
119	HOVNUMLN	High Occupancy Vehicle Lanes	10	10		100%
	HOVTYPE	High Occupancy Vehicle Type	10	10		100%
	TOLLCHGS	Toll Charges	10	10		100%
	TOLLNAME	Name of Toll Facility	10	10		100%
	TOLLTYPE	Toll Type	10	10		100%
120	RTESGNCD	Route Signing	10	10		100%
	TYPEROAD	Type of Road	10	10		100%
122	RDACCESS*	Access Control Type	10	10		100%
212	NOLANES	Number of Roadway Lanes	10	10		100%
	SURWIDTH	Pavement Surface Width	10	10		100%
214	SHLDTYPE	Highway Shoulder Type	10	10		100%
	SLDWIDTH	Highway Shoulder Width	10	10		100%
215	MDBARTYP	Type of Median Barrier	10	10		100%
	MEDWIDTH	Highway Median Width	10	8	PU	80%
	RDMEDIAN	Highway Median Type	10	10		100%
219	ISLDTYPE	Inside Shoulder Type	10	10		100%
	ISLDWDTH	Inside Shoulder Width	10	10		100%
230	PAVINDEX	Pavement Index	10	10		100%
	SURFNUM	Pavement Surface Type	10	10		100%
232	SURFLAYx	Pavement Surface Layer (x = 1-7)	10	10		100%
	SURFLxTH	Pavement Surface Thickness (x = 1-7)	10	10		100%
311	MAXSPEED	Maximum Speed Limit	10	8	MN	80%
		HPMS Office Total:	**360**	**351**		**97.5%**

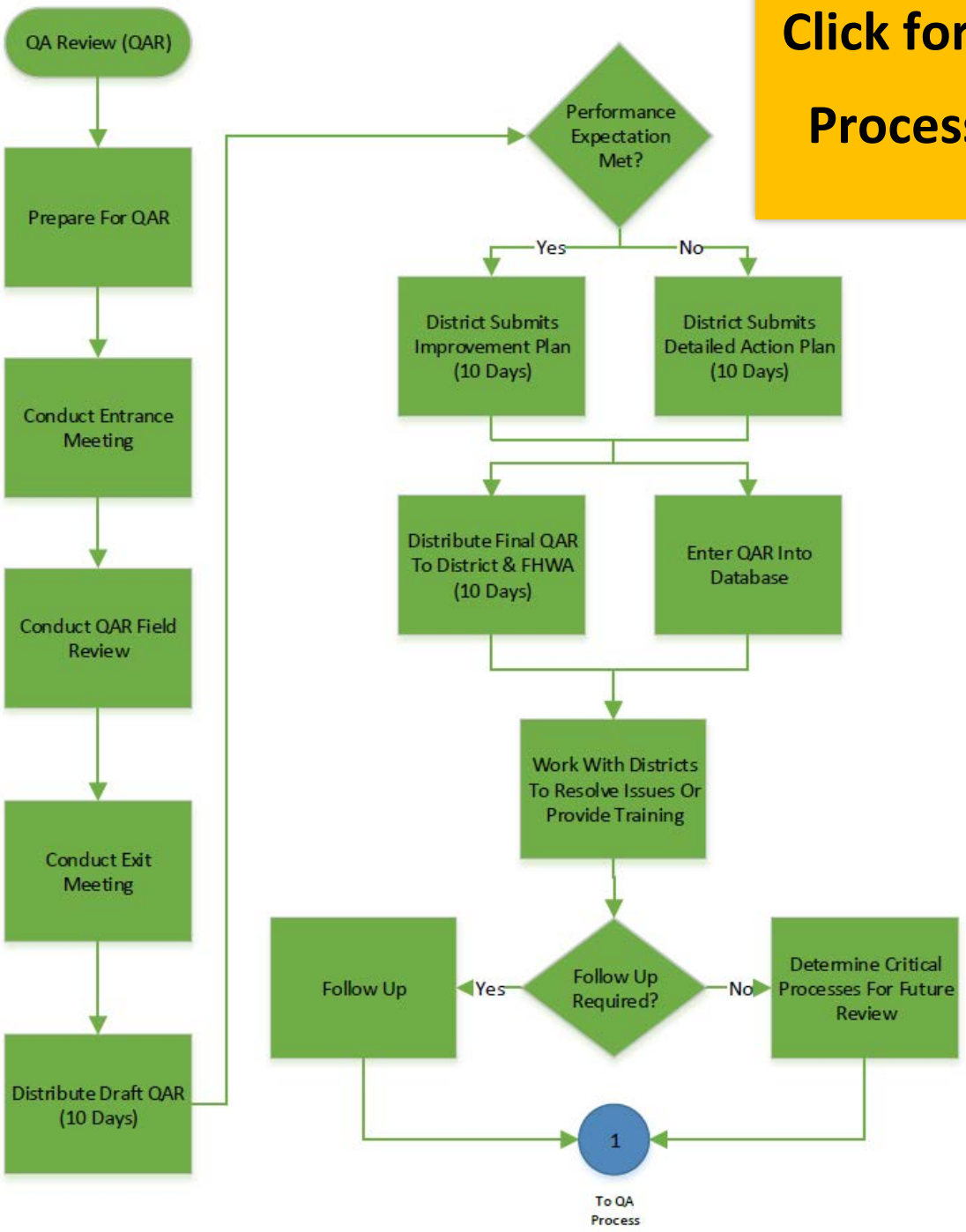
* Required accuracy for these Characteristics is 100%.

QUALITY ASSURANCE REVIEW PROCESS

In general, the QAR process monitors a total of six major review areas of compliance to ensure quality data and meet submittal datelines to FHWA. The District staff will begin making scheduling and logistics arrangements for the QAR Field Review with the QA team after receiving the selected RCI segments and HPMS samples from the TDA Office. The QAR is conducted with the TDA Office QA team and District staff and it is approximately a four-day process. FHWA staff may be in attendance throughout the four-day QAR process.

On Monday of the agreed QAR week, FDOT staff travels to the District Office to begin the QAR process with an Entrance Meeting. On Tuesday and Wednesday, the District QAR Field Review process occurs. On Thursday, the QA team conducts a Pre-Exit Meeting and QAR Exit meeting with District staff and District Management.

Click for Larger Process Map



QAR Entrance Meeting

Once the QA team arrives at the District Office, the team will hold a QAR Entrance Meeting with the District. The District Statistics Administrator and RCI data coordinators are required to attend along with appropriate District Management. Any responsible District staff are encouraged to attend the QAR meetings. During the Entrance meeting the four major QAR review areas of compliance (shown below) will be discussed and scores will be presented (includes RCI and HPMS office review).

- RCI Data Collection Timeliness
- Straight Line Diagram (SLD) Data Accuracy and Legibility
- Key Sheet Production and Distribution
- HPMS Data Collection Timeliness

The entrance meeting process allows the District and QA team staff to discuss the QAR review process (including the four areas of compliance), the District Quality Control Plan, route plans, field schedule, and any other related data collection processes or concerns. The District will use this opportunity to discuss existing concerns and request needed training.

Each District provides a copy of their Quality Control Plan for RCI and HPMS data collection for discussion and review by the QA team. The Districts are encouraged to share any additional documentation, tracking applications, or any useful information to improve the QA process.

District QC Monitoring Plan

The District QC Monitoring Plan is a specific individualized District plan that is comprehensive, well-defined, and contains a written set of processes, tasks, and activities designed to produce services and products at a consistent quality level. It will establish a specific approach to quality control as well as hold the District accountable.

The District QC Monitoring plan includes specific and detailed District processes that focus on reviewing, tracking, and collecting accurate, timely data. The QC monitoring plan outlines appropriate corrective action(s) for fixing and avoiding future inconsistencies. Districts are responsible for ensuring that their QC process of the RCI and HPMS data effectively represents accurate data.

QAR Field Review Process

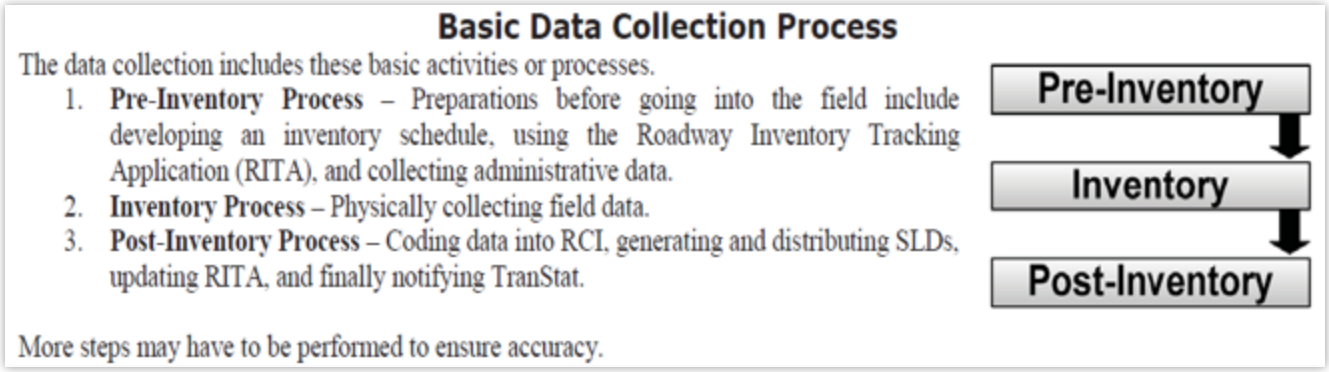
The District staff shall prepare for the two-day field review using the selected roadways (RCI segments and HPMS samples) within ten working days before the QAR commences. On Wednesday and Thursday, the QA team and District staff head out together to conduct the RCI and HPMS field review.

The District assists the QA team by providing the following:

- A vehicle able to accommodate a minimum of four persons.
- A minimum of one licensed driver.
- A vehicle with an approved distance measuring instrument.
- An additional person knowledgeable in the program being reviewed to accompany the team and be available to answer questions (this person may serve as the additional driver if needed).
- Documentation such as construction notices, route plan, location maps, inventory schedules, Key Sheets, current SLDs, and pre-inventory historical files, if needed.
- Conduct a vehicle safety inspection to ensure a reliable vehicle. Gather field equipment, all listed items on the vehicle safety inspection sheet and verify that it is in working condition.

The field review process allows the QA team to learn more about the District's data collection process, coding concerns, and QC process. The QA team will listen to any concerns or suggestions that the District may identify and discuss with appropriate staff within TDA. The QA team and District staff have continuous open discussions identifying field review inconsistencies, needed process improvements, and best practices throughout the entire QAR process. The QAR field review findings will be outlined in detail and provided to District staff.

The QAR field review is conducted using the Basic Data Collection process, shown below, as stated in the Data Collection Process in the RCI Planning Data Handbook.



The Basic Data Collection process explains the general methods to conduct an inventory for Active On the State Highway System (SHS), Active Exclusive, Active Off the SHS, Local Roads, New Construction/Pending, and managed lane roadways. The process includes the pre-inventory, inventory and post-inventory processes.

Pre-Inventory Process

Requirement: Apply the Basic Data Collection Process Pre-Inventory steps as a general guideline to prepare before going into the field to review RCI and HPMS roadways. Review inventory schedule in RITA, historical roadway data, and verify existing administrative data.

Responsible Party: Districts

Required For: All RCI roadway and HPMS samples. Refer to feature details (including Feature 118 & 119) in the RCI Features & Characteristics Handbook produced by the TDA Office.

How to QC this process: During the pre-inventory process, ensure that the office and field preparation are completed. Some pre-inventory office preparation activities include generating RCI 5-years inventory schedule in the RITA application, collect and review existing and historical data, and verify the existing administrative data.

Some pre-inventory field preparation activities include conducting a vehicle safety check, gather equipment and calibrating the distance measuring instrument (DMI). Calibrating the DMI may or may not be needed. Each District has a calibration course that is at least 1,000 feet in length, free from traffic, and on flat terrain for DMI calibration accuracy check.

During a QAR, the QA team conducts the pre-inventory office process by reviewing the RCI data collection timeliness, SLD data accuracy and legibility, key sheet production and distribution, RCI office review, HPMS data collection timeliness, and HPMS office review. This process is discussed during the QAR Entrance Meeting which occurs during the first day of the QAR process.

During a QAR, the QA team ensures the pre-inventory field preparation process has been performed before leaving the District office and beginning the field review. After conducting the Pre-Inventory steps successfully, the QA team and District staff will begin the data collection field inventory review. The QA team encourages open discussions to review inconsistencies found throughout the entire QAR process.

Inventory Process

Requirement: Conducting the Basic Data Collection Process Inventory steps using the general methods outlined in the RCI Planning Data Handbook.

Responsible Party: Districts

Required For: All RCI roadway and HPMS samples. Refer to the RCI Features & Characteristics Handbook produced by the TDA Office for details of the RCI and HPMS feature elements.

How to QC this process: Once the pre-inventory process is completed, the RCI field inventory is conducted where data is physically collected and reviewed in the field. The Five Steps in RCI Field Inventory are outlined below and used during a QAR process. Districts are encouraged to apply the guidelines in their data collection process. The RCI Planning Data Handbook, provides more detail information for reference.

The Five Steps in RCI Field Inventory

The Five Steps in RCI Field Inventory:

1. Record street names, bridge numbers, mile markers, call boxes, county lines, railroad crossing numbers, and intersection names while establishing roadway length.
2. Record milepoints for all intersections and counter stations.
3. Record milepoints for roadway feature changes (number of lanes, median type, and shoulder type).
4. Measure lane width, median width, and shoulder width.
5. Record milepoints for miscellaneous features (land use, pavement condition, and friction course).

During the two-day field review, the QA team and District staff measures and reviews the RCI and HPMS features and characteristics data coded in the RCI database. The QA team identifies inconsistencies in data collection coding or practices, and observes the District's best practices. At all times, the QA team and District staff use precautionary safety steps to ensure a successful review.

QAR Pre-Exit Meeting

After the entrance meeting and field review, the QA team will conduct a pre-exit meeting with the District staff and District Management (optional) on the last day of the review. The objective of this meeting is to discuss, review, and agree upon the QAR field review findings. The pre-exit meeting is a collaborative discussion meeting among the QA team and District staff.

District staff are encouraged to discuss concerns and provide field data collection sheets or additional documentation to better facilitate the discussion. Solutions and/or recommendations to improve the District's, TDA's, or the QA team's efforts are open for discussion throughout this meeting.

QAR Exit Meeting

The objective of the QAR Exit Meeting is to present the QAR observations, inconsistencies, QAR scores and discuss the recommended District improvements related to QA/QC. The Central Office and District Management are encouraged to attend the exit meeting in addition to the supervisors and district staff. If needed, with advanced notification, accommodation may be made to allow participants to attend via teleconference/video conference.

The QAR exit meeting allows an opportunity for the District to offer feedback to any program processes. If additional meetings are requested by the District, the QA Coordinator will provide a venue for further discussion.

QAR Follow-Up Process

The QAR follow-up process includes the following steps:

- After the QAR exit meeting, the TDA Office QA team will review and prepare a Draft QAR report with supporting documentation to District staff within ten working days following the meeting date. The Draft QAR report will outline the performance expectations of the major areas of compliance and address the areas of non-compliance. The QA team and District staff will work together towards an official draft document that is agreed upon based on the QAR findings and discussions. The TDA Transportation Data Inventory Manager will provide the Draft QAR report to the District Statistics Administrator, RCI data coordinators, and any appropriate District Management. An example of a QAR report is shown in Appendix D.
- After receiving and reviewing the Draft QAR report, the District staff will disagree or concur with the report findings and respond to the QA Coordinator. The District staff is required to respond by submitting an Improvement Plan or a detailed Action Plan outlining the District's plan to resolve areas of needed improvement within ten working days from the Draft QAR Report due date and notify the TDA Office QA Coordinator and the Transportation Data Inventory Manager.

  If the District contends with the Draft QAR report findings, the QA Coordinator will set-up a discussion meeting with TDA staff to address the concerns. If the District concurs with the Draft QAR report findings, the QA Coordinator will proceed to prepare the Final QAR Report. The TDA Office QA Coordinator will review, coordinate, and provide support to the District staff with preparing the

Improvement Plan or Action Plan outline.

- The QA team will compile the District's Plan in the Final QAR Report within ten working days from the District's Action Plan submittal. The TDA Office Cost-Center Manager will provide the Final QAR Report to District Management and their responsible staff.

  The Districts are required to correct/follow-up on the inconsistencies found in the QAR process within 60 days from the submittal of the Improvement Plan or Action Plan and notify TDA staff of completion.

  The QA team will track the District's Improvement Plan or Action Plan to ensure the timeliness of correcting the inconsistencies and provide support to the District staff during this process. These steps will ensure any issues or concerns are fully communicated/understood and will reinforce the importance of the data governance process.

QUALITY ASSURANCE REVIEW SCORING – RCI SEGMENTS

The QAR scoring process is broken down into the four major areas of compliance for RCI Segments:

- RCI Data Collection Timeliness
- Straight Line Diagram (SLD) Data Accuracy and Legibility
- Key Sheet Production and Distribution
- RCI Data Collection Accuracy

The QAR RCI segments scorecard is presented in a table format and shown below. The RCI scorecard breakdown is part of the Final QAR report, along with the RCI field review listing. The QAR scoring is calculated based on a total of 560 RCI Overall points with a breakdown of 250 points (25 characteristics reviewed for 10 segments) in the RCI Office and 310 points (31 characteristics reviewed for 10 segments) in the RCI Field.

Scoring Reports begin on next page…

Quality Assurance Review Report
Roadway Characteristics Inventory (RCI)

RCI Segments Reviewed						
Segment	County	Roadway ID	Route Number/Street Name	Segment BMP	Segment EMP	QAR Miles
A	County Name	XXXXXXXX	Local name of the roadway	1.000	2.000	1.000
B	County Name	XXXXXXXX	Local name of the roadway	2.000	3.000	1.000
C	County Name	XXXXXXXX	Local name of the roadway	1.000	3.000	2.000
D	County Name	XXXXXXXX	Local name of the roadway	5.000	9.000	4.000
E	County Name	XXXXXXXX	Local name of the roadway	2.000	4.000	2.000
F	County Name	XXXXXXXX	Local name of the roadway	10.000	13.000	3.000
G	County Name	XXXXXXXX	Local name of the roadway	8.000	10.000	2.000
H	County Name	XXXXXXXX	Local name of the roadway	5.000	7.000	2.000
I	County Name	XXXXXXXX	Local name of the roadway	0.000	2.000	2.000
J	County Name	XXXXXXXX	Local name of the roadway	9.000	12.000	3.000
ALTERNATES						
K	County Name	70225000	Local name of the roadway	1.000	2.000	1.000
L	County Name	75030000	Local name of the roadway	2.000	4.000	2.000

*** Full Length of the Roadway** **** Alternate Run Entire Length** **Total Miles Reviewed: 22.000**

RCI Data Collection Timeliness				
Area of Performance	Number Selected	Number Correct	Inconsistent Segment(s)	Percent Correct
†5-Year Compliance	10	7	CDF	70%

† Required accuracy for this Area of Performance is 100%

SLD Data Accuracy & Legibility				
Area of Performance	Number Selected	Number Correct	Inconsistent Segment(s)	Percent Correct
*SLD Matches RCI Data	10	8	BD	80%
*Legibility	10	10		100%

* Required accuracy for these Areas of Performance is 90%

Key Sheet Production & Distribution				
Area of Performance	Number of Key Sheets	Number Correct	Inconsistent Key Sheet(s)	Percent Correct
†Current	3	3	0	100%
†Legibility	3	3	0	100%

† Required accuracy for these Areas of Performance is 100%

Quality Assurance Review Report
Roadway Characteristics Inventory (RCI)

RCI Scorecard			
Area of Performance	**Total Selected**	**Total Correct**	**Percent Correct**
RCI Office	250	243	97.2%
RCI Field	310	286	92.3%
†RCI Overall	**560**	**529**	**94.5%**

† Required accuracy for these Areas of Performance is 95%

RCI Office Features & Characteristics						
Feature	**Characteristic**	**Definition**	**Total Selected**	**Total Correct**	**Inconsistent Segment(s)**	**Percent Correct**
111	STROADNO*	State Road Number	10	10		100%
112	FAHWYSYS*	Federal Highway System Code	10	10		100%
113	USROUTE*	US Route Number	10	10		100%
121	FUNCLASS*	Functional Classification	10	10		100%
124	HWYLOCAL*	Highway Location Code	10	7	BGH	70%
	PLACECD*	Current Place Code	10	8	AH	80%
	URBAREA*	Urban Area Number	10	9	A	90%
	URBSIZE	Urban Size	10	9	A	90%
138	NALIGNDT	New Alignment Date	10	10		100%
	NALIGNID	Section/Sub-section of New Alignment	10	10		100%
	NALNBGPT	New Alignment Begin MP	10	10		100%
	NALNENPT	New Alignment End MP	10	10		100%
140	OSDATE	On or Off-system Date	10	10		100%
	STATEXPT*	Segment Status	10	10		100%
141	BEGSECPT	Begin Section MP of Exception Field	10	10		100%
	ENDSECPT	End Section MP of Exception Field	10	10		100%
	RDWYID	County, Section, Sub-section	10	10		100%
147	SISFACTPx	SIS Facility Type Level (x = 1-9)	10	10		100%
252	EXITNO	Interchange/Exit Number	10	10		100%
	INTERCHG	Type of Interchange	10	10		100%
330	FLWBRKID	Count Station Assigned to Break	10	10		100%
	TRFBRKCD	Traffic Break Code	10	10		100%
331	AADTDATE	AADT Date	10	10		100%
	AADTTYPE	AADT Type	10	10		100%
	SECTADT	Section Average ADT	10	10		100%
		RCI Office Total:	**250**	**243**		**97.2%**

* Required accuracy for these Characteristics is 100%.

Quality Assurance Review Report
Roadway Characteristics Inventory (RCI)

RCI Field Features & Characteristics						
Feature	Characteristic	Definition	Total Selected	Total Correct	Inconsistent Segment(s)	Percent Correct
114	LOCALNAM*	Local Name of Facility	10	10		100%
120	TYPEROAD	Type of Road	10	10		100%
122	RDACCESS*	Access Control Type	10	10		100%
212	NOLANES	Number of Roadway Lanes	10	9	J	90%
	SURWIDTH	Pavement Surface Width	10	9	J	90%
213	AUXLNTYP	Auxiliary Lane Type	10	10		100%
	AUXLNUM	Number of Auxiliary Lanes	10	10		100%
	AUXLNWTH	Average Auxiliary Lane Width	10	10		100%
214	SHLDTYPE	Highway Shoulder Type	10	6	BCDG	60%
	SLDWIDTH	Highway Shoulder Width	10	7	BCD	70%
215	MDBARTYP	Type of Median Barrier	10	9	D	90%
	MEDWIDTH	Highway Median Width	10	7	AHJ	70%
	RDMEDIAN	Highway Median Type	10	7	AHJ	70%
216	BIKELNCD	Bicycle Lane	10	10		100%
	BIKSLTCD	Bicycle Slot	10	10		100%
	SDWLKBCD	Sidewalk Barrier Code	10	10		100%
	SHARDPTH	Share Path Width & Separation	10	10		100%
	SIDWLKWD	Sidewalk Width & Separation	10	10		100%
219	ISLDTYPE	Inside Shoulder Type	10	10		100%
	ISLDWDTH	Inside Shoulder Width	10	10		100%
251	BEGSECNM	Begin Roadway Section MP Description	10	10		100%
	ENDSECNM	Ending Roadway Section MP Description	10	10		100%
	INTSDIRx	Intersection Direction (x = 1-9)	10	6	ADFH	60%
253	CHKDIGIT	Check Digit	10	10		100%
	RRCROSNO	National RR Grade Crossing Number	10	10		100%
258	BOXCULNO	Box Culvert Number	10	10		100%
	BRIDGENO	Bridge Number	10	9	D	90%
	FACCROSS	Facility Crossed	10	10		100%
	UNDPASNO	Underpass Number	10	10		100%
326	TRFSTANO	Traffic Station Number	10	8	FJ	80%
	TRSSTATYP	Traffic Station Type	10	9	F	90%
		RCI Office Total:	**310**	**286**		**92.3%**

* Required accuracy for these Characteristics is 100%.

QUALITY ASSURANCE REVIEW SCORING – HPMS SAMPLES

The QAR scoring process is broken down into the two major areas of compliance for HPMS Samples:

- HPMS Data Collection Timeliness
- HPMS Data Collection Accuracy

The QAR HPMS Samples scorecard is presented to district staff as part of the QAR report in a table format and shown below. The scoring is calculated based on a total of 620 HPMS overall points with a breakdown of 260 points (26 characteristics reviewed for 10 samples) in the HPMS Office and 360 points (36 characteristics reviewed for 10 samples) in the HPMS Field.

District X
Month, Day, Year

Quality Assurance Review Report
Highway Performance Monitoring System (HPMS)

HPMS Samples Reviewed						
Segment	County	HPMS ID	Route Number/Street Name	Sample BMP	Sample EMP	QAR Miles
M	County Name	XXXXXXXX-XXXX	Local name of the roadway	5.431	6.426	0.995
N	County Name	XXXXXXXX-XXXX	Local name of the roadway	6.563	7.844	1.281
O	County Name	XXXXXXXX-XXXX	Local name of the roadway	17.464	18.125	0.661
P	County Name	XXXXXXXX-XXXX	Local name of the roadway	0.000	0.618	0.618
Q	County Name	XXXXXXXX-XXXX	Local name of the roadway	0.501	2.390	1.889
R	County Name	XXXXXXXX-XXXX	Local name of the roadway	0.000	1.322	1.322
S	County Name	XXXXXXXX-XXXX	Local name of the roadway	0.000	1.012	1.012
T	County Name	XXXXXXXX-XXXX	Local name of the roadway	3.003	3.990	0.987
U	County Name	XXXXXXXX-XXXX	Local name of the roadway	6.000	7.271	1.271
V	County Name	XXXXXXXX-XXXX	Local name of the roadway	4.248	6.277	2.029
ALTERNATES						
W	County Name	XXXXXXXX-XXXX	Local name of the roadway	0.000	1.427	1.427
X	County Name	XXXXXXXX-XXXX	Local name of the roadway	0.000	1.161	1.161
					Total Miles Reviewed:	14.653

HPMS Data Collection Timeliness				
Area of Performance	Number Selected	Number Correct	Inconsistent Sample(s)	Percent Correct
†3-Year Compliance	10	10		100%

† Required accuracy for this Area of Performance is 100%

Quality Assurance Review Report
Highway Performance Monitoring System (HPMS)

HPMS Scorecard			
Area of Performance	**Total Selected**	**Total Correct**	**Percent Correct**
HPMS Office	260	260	100.0%
HPMS Field	360	351	97.5%
†HPMS Overall	**620**	**611**	**98.5%**

† Required accuracy for these Areas of Performance is 90%

HPMS Office Features & Characteristics						
Feature	**Characteristic**	**Definition**	**Total Selected**	**Total Correct**	**Inconsistent Sample(s)**	**Percent Correct**
111	STROADNO*	State Road Number	10	10		100%
112	FAHWYSYS*	Federal Highway System Code	10	10		100%
113	USROUTE*	U.S. Route Number	10	10		100%
118	CURCLASx	Curves by Class (x = A-F)	10	10		100%
	GRACLASx	Grades by Class (x = A-F)	10	10		100%
	HPMSIDNO	HPMS Sample ID Number	10	10		100%
	TERRAIN	Type of Land Terrain	10	10		100%
119	BASETHIK	HPMS Base Course Thickness	10	10		100%
	BASETYPE	HPMS Base Type	10	10		100%
	FLEXTHIK	HPMS Thickness of Flexible Pavements	10	10		100%
	OVRYTHIK	HPMS Last Overlay Thickness	10	10		100%
	RIGIDTHIK	Thickness of Rigid Pavement	10	10		100%
	SURFACTP	Surface Type	10	10		100%
	YRCONST	Year of Last Construction	10	10		100%
	YRIMPT	Year of Last Improvement	10	10		100%
121	FUNCLASS*	Functional Classification	10	10		100%
122	TOLLROAD	Toll Road Flag	10	10		100%
124	HWYLOCAL*	Highway Location Code	10	10		100%
	PLACECD*	Census Place (City) Code	10	10		100%
	URBAREA*	Urban Area Number	10	10		100%
	URBSIZE	Urban Size	10	10		100%
330	FLWBRKID	Count Station Assigned to Break	10	10		100%
	TRFBRKCD	Traffic Break Code	10	10		100%
331	AADTDATE	AADT Date	10	10		100%
	AADTTYPE	AADT Type	10	10		100%
	SECTADT	Section Average ADT	10	10		100%
		HPMS Office Total:	**260**	**260**		**100.0%**

* Required accuracy for these Characteristics is 100%.

Quality Assurance Review Report
Highway Performance Monitoring System (HPMS)

HPMS Field Features & Characteristics						
Feature	Characteristic	Definition	Total Selected	Total Correct	Inconsistent Sample(s)	Percent Correct
118	ATGROTHR	Other or No Control At-Grade Intersections	10	10		100%
	ATGRSIG	Signals At-Grade Intersections	10	9	O	90%
	ATGRSTOP	Stop Signs At-Grade Intersections	10	8	RT	80%
	ATGRTYPE	At-Grade Type - First or Last	10	10		100%
	HORALADQ	Horizontal Alignment Adequacy	10	10		100%
	PEAKLANE	Number of Lanes in Peak Direction in Peak Hour	10	10		100%
	SIGPREV	Prevailing Type of Signalizations	10	10		100%
	SIT1500	% of Passing Sight Distance >= 1500 feet	10	10		100%
	TURNLANL	Turn Lanes Left	10	9	T	90%
	TURNLANR	Turn Lanes Right	10	10		100%
	TYPEOP	Type of Parking	10	9	T	90%
	VRTALADQ	Vertical Alignment Adequacy	10	10		100%
	WIDOBST_	Widening Obstacles - A through G, and X	10	10		100%
	WIDPOTNL	Widening Potential Lanes	10	10		100%
119	HOVNUMLN	High Occupancy Vehicle Lanes	10	10		100%
	HOVTYPE	High Occupancy Vehicle Type	10	10		100%
	TOLLCHGS	Toll Charges	10	10		100%
	TOLLNAME	Name of Toll Facility	10	10		100%
	TOLLTYPE	Toll Type	10	10		100%
120	RTESGNCD	Route Signing	10	10		100%
	TYPEROAD	Type of Road	10	10		100%
122	RDACCESS*	Access Control Type	10	10		100%
212	NOLANES	Number of Roadway Lanes	10	10		100%
	SURWIDTH	Pavement Surface Width	10	10		100%
214	SHLDTYPE	Highway Shoulder Type	10	10		100%
	SLDWIDTH	Highway Shoulder Width	10	10		100%
215	MDBARTYP	Type of Median Barrier	10	10		100%
	MEDWIDTH	Highway Median Width	10	8	PU	80%
	RDMEDIAN	Highway Median Type	10	10		100%
219	ISLDTYPE	Inside Shoulder Type	10	10		100%
	ISLDWDTH	Inside Shoulder Width	10	10		100%
230	PAVINDEX	Pavement Index	10	10		100%
	SURFNUM	Pavement Surface Type	10	10		100%
232	SURFLAYx	Pavement Surface Layer (x = 1-7)	10	10		100%
	SURFLxTH	Pavement Surface Thickness (x = 1-7)	10	10		100%
311	MAXSPEED	Maximum Speed Limit	10	8	MN	80%
		HPMS Office Total:	**360**	**351**		**97.5%**

* Required accuracy for these Characteristics is 100%.

APPENDIX A - ACRONYMS

Abbreviations	**Meanings**
AADT	Average Annual Daily Traffic
BMP	Beginning Milepoint
DSA	District Statistics Administrator
EMP	Ending Milepoint
FDOT	Florida Department of Transportation
FHWA	Florida Highway Administration
GIS	Geographic Information System
GIRD	General Interest Roadway Data Procedure
HPMS	Highway Performance Monitoring System
ID	Identification (example Roadway ID)
Key Sheet	County Section Number Key Sheet
LRS	Linear Reference System
MP	Milepoint
NHS	National Highway System
QA	Quality Assurance
QAMP	Quality Assurance Monitoring Plan
QAR	Quality Assurance Review
QC	Quality Control
RCI	Roadway Characteristics Inventory
RITA	Roadway Inventory Tracking Application
SHS	State Highway System
SIS	Strategic Intermodal System
SLD	Straight-Line Diagram
SLO	Straight-Line Diagrams Online
TDA	Transportation Data and Analytics Office
VUD	View/Update/Delete screen

APPENDIX B - QUALITY MANAGEMENT POLICY

Florida Department of Transportation

RICK SCOTT
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

MIKE DEW
SECRETARY

POLICY

Effective: August 16, 2017
Review Date: May 31, 2017
Office: Organizational Development
Topic No.: 001-260-001-c

QUALITY MANAGEMENT

It is the policy of the Florida Department of Transportation to use a systematic but flexible approach for Quality Management to monitor work processes and implement laws, rules, procedures, policies and standards. This is intended to ensure compliance and quality performance by the Central Office and District units responsible for the delivery of transportation products, services and information.

Quality Management is defined as the activities and functions that promote continuous learning, compliance, consistency, and effectiveness throughout the Department's operations and functions and provides meaningful information. The three main components of Quality Management are:

- **Quality**: conformance to valid customer, business, and statutory requirements.
- **Quality Assurance**: activities that provide factual evidence that products, services, and information are delivered as required, by agency, statutory, or federal requirements, and in the most effective way.
- **Quality Control**: the course of actions taken to implement, monitor, and improve processes to meet quality standards.

Executive leadership shall determine which functional units have formal Quality Management reporting responsibility as defined in this policy.

The Central Office Organizational Development Office shall maintain a Quality Management policy, administer a functional, centralized Quality Management reporting system to provide useful, real time information and trend analysis of Quality Assurance Reviews (QARs), and develop and maintain relevant supporting resources (best practices, guidelines, and consultation services). This Office shall also maintain a current listing of offices responsible for formal Quality Management reporting and provide relevant training and development opportunities; including but not limited to instructor led training courses, computer based training courses, consultation services, and other resources that support the needs of the target audience.

All departmental managers shall be accountable for quality assurance and control within their areas of responsibility. All Central Office and District staff and review teams assigned formal Quality Management reporting responsibility shall complete training in Quality Management.

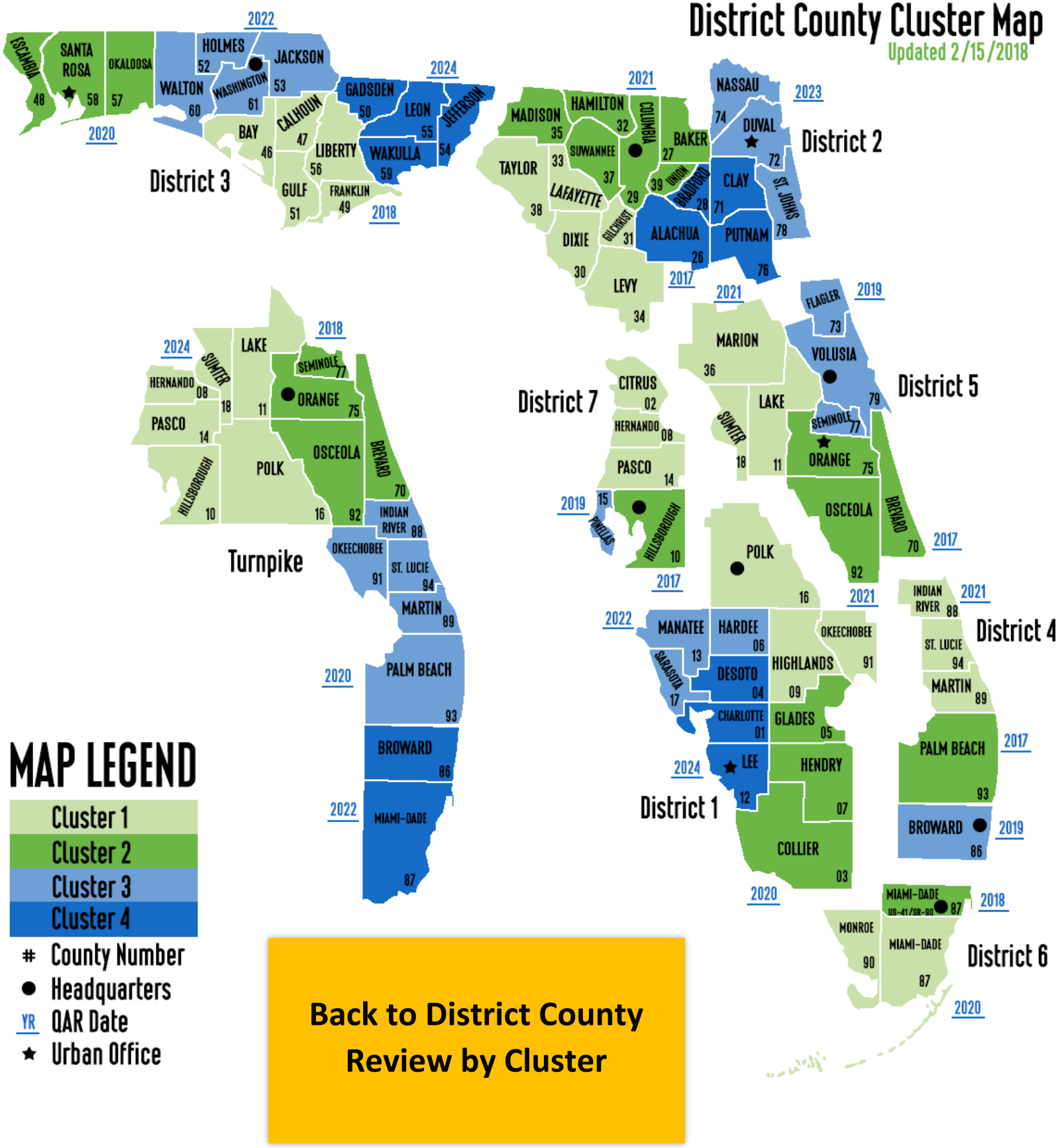
Functional unit employees assigned formal Quality Management reporting responsibility shall update the Quality Management reporting system with data in accordance with required QAR schedules and findings. This data shall identify key processes, valid customer and business requirements, review team(s) and process/program administrators, success measures, performance targets, and review schedules, etc. As QARs are completed, functional unit employees shall communicate findings and develop action plans for any areas of non-compliance with the reviewed unit employees.

Reviewed unit employees shall acknowledge, implement, and monitor/update the progress of action plans within the Quality Management reporting system.

The Central Office Organizational Development Office shall monitor corrective action target dates and status, collaborate with unit staff to ensure implementation, and prepare a quarterly compliance report and corrective action status updates for Executive leadership's review.

Mike Dew
Secretary

APPENDIX C - DISTRICT COUNTY CLUSTER MAP



Back to District County Review by Cluster

APPENDIX D - QUALITY ASSURANCE REVIEW REPORT

Florida Department of Transportation
RICK SCOTT
GOVERNOR
605 Suwannee Street
Tallahassee, FL 32399-0450
MIKE DEW
SECRETARY

DATE: June 22, 2017

TO: Steve Martin, District Five Secretary
Rick Morrow, Director of Transportation Development

FROM: Ed Hutchinson, Transportation Data & Analytics Manager

COPIES: **FDOT Central Office**: Tom Byron, April Blackburn, John Krause, Joel Worrell, Steven Bentz, Paul O'Rourke, and Andrea Hodge

FDOT District Office: Frank J. O'Dea, P.E., Christine Barone, Brian Stanger, P.E., David Cooke, P.E., Matthew Pierce, Hector Matos, Barry Hallman, Elizabeth Nelson, and Kim Auerbach

Federal Highway Administration: LeeAnn Jacobs, Stacie Blizzard

SUBJECT: Quality Assurance Review (QAR) Report of the District Five Planning and Environmental Management Office (PLEMO)
General Interest Roadway Data (GIRD) Procedure, Topic No. 525-020-310
Quality Assurance (QA) Monitoring Plan 2014/2015 (Effective September 2014)
Review Dates 3/13/17 – 3/16/17, Review No. 517

OVERVIEW

The Transportation Data and Analytics (TDA) Office staff documents and collaborates with District staff to determine if the District processes and quality control plans are effectively meeting procedural requirements. The roads examined for this review were selected from Brevard, Orange, and Osceola Counties. Ten Active On-System Roadway Characteristics Inventory (RCI) segments were randomly selected for field, office, and Straight-Line-Diagram (SLD) reviews. Ten Off-System Highway Performance Monitoring System (HPMS) samples were randomly selected for field and office reviews.

The following district processes were evaluated for this review:

- Straight-line Diagram Production
- County Section Number Key Sheet (Key Sheet) Production
- Roadway Characteristics Inventory (Data Management)
- Highway Performance Monitoring System Data Management

The QAR process entails four basic steps:

1. TDA conducts the QAR with the District's staff.
2. TDA sends the Draft QAR Report to the District Statistics Administrator (DSA) identifying the QAR findings.

ssing issues raised in the QAR report.
District Director and Managers with supporting

h 13-16, 2017. The TDA QAR field team included
l support from the TDA Office staff, as needed. Stacie
tion (FHWA) also attended the QAR. The District Five
Elizabeth Nelson and Kim Auerbach with additional
l.

ring Plan includes the needed steps necessary to
sures outlined in the TDA Annual QA Monitoring
nctions:

led into separate phases: Pre-Inventory (office and field
ffice and field preparation), Post-Inventory, Roadway
updates, and SLD updates. The District RCI staff
and field inventory sheets for each roadway.
es the processes and procedures the District has
ndards put forth and stated in TDA Annual QA

gether to outline the process indicators identified in
ion.

compliance with Departmental procedures and
re discussed at the Exit Meeting. District Five has
n-compliance and steps they are taking to reach
submitted to TDA Office on May 5, 2017.

The Action Plan recommendations included modifying the District Five data collection process by devoting additional resources to the field data collection and verification processes. Utilizing a two-person crew would also help provide further field safety guidelines while conducting field operations.

District Five identified two major issues in their Quality Control process:

- Because of the frequent changes to the RCI data collection policies and procedures, there are no provisions to assess RCI procedural understanding by District RCI staff. The District is implementing a minimum of quarterly meetings with the RCI staff to discuss RCI changes, obstacles to proper data collection, and implementation of new policies and procedures. These meetings will promote understanding, open discussions, and uniformity in data collection policies and procedures throughout the District.
- The current District QC Monitoring Plan lacks focus. The District will uses the District Quality Evaluations (DQE) Review, QAR and random sampling report to outline key features. This outline will allow the District to address the most current areas of non-compliance and take a focused approach to resolving issues and preventing future reoccurrences.

The District Five Action Plan also addressed non-compliance in the following areas:

- SLD Data Accuracy and Legibility

Florida Department of Transportation

Transportation Data and Analytics Office

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